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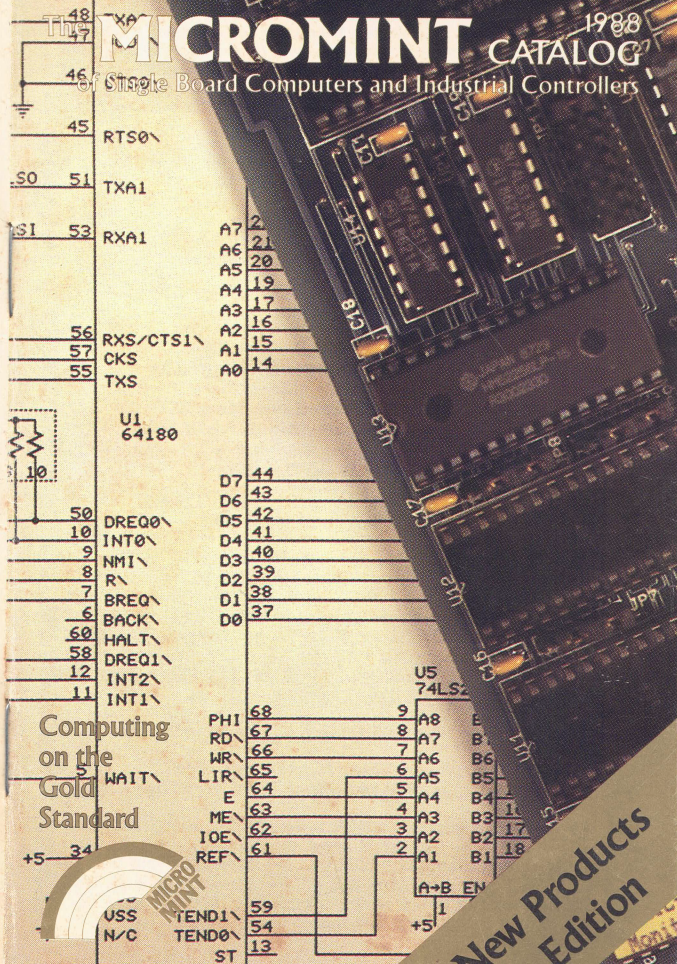


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# MICROMINT CATALOG

Of Single Board Computers and Industrial Controllers



New Products  
Edition

Throughout the past decade Micromint has continually provided the OEM manufacturing community with high-quality single-board computers and controllers which have just the right blend of advanced technology and price-performance. You will find in this edition of the Micromint product catalog that we have continued that tradition.

Below we have specifically listed new products or product enhancements that should be of particular interest. Be sure to look at them as you review our new 1988 catalog.

| Product              | Description                                                           | Page  |
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| <b>SB180FX-2MME</b>  | 2 Mbyte memory expansion board for the SB180FX                        | 5     |
| <b>SB180 Systems</b> | New SB180/SB180FX System configurations                               | 8     |
| <b>XBIOS</b>         | Extended BIOS for SB180/SB180FX                                       | 9     |
| <b>BCC180</b>        | New 64180-based high-speed BCC-bus controller with multitasking BASIC | 10/11 |
| <b>BASIC-180</b>     | Multitasking BASIC Compiler                                           | 12    |
| <b>BCC52CX</b>       | Increased memory and I/O function CMOS version of the BCC52           | 14    |
| <b>BCX/xx</b>        | AC powerline remote control for BCC180, BCC52, and IBM PC             | 17    |
| <b>BCC40D/40R</b>    | 8-Channel Optoisolated I/O and 8-Channel Relay Output board           | 18/19 |
| <b>BCC Systems</b>   | Preconfigured BCC180, BCC52, and BCC11 systems                        | 22/23 |
| <b>ADP500</b>        | User vocabulary, digitized speech board                               | 25    |
| <b>OEM-286</b>       | Low-Power PC/AT-compatible CPU board                                  | 27    |

#### On the Design Board, available in Fall '88:

Stepper motor controller, 12-bit D/A converter, BCC-bus SCSI and floppy disk controller, Mini BCC180 OEM board with A/D, 8096/80C196-based BCC-bus computer/controller, 80C252-based BCC-bus computer/controller, and lots of new software.

## Section 1: Single Board Disk Based Computers

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# TECHNICAL SPECIFICATIONS

## PROCESSOR

- \* Hitachi HD64180, an 8-bit CPU in a 68 pin PLCC package
- \* Superset of Z-80 instruction set, including hardware multiply
- \* Integrated Memory Management Unit with 1 Mbyte address space
- \* Dynamic RAM refresh
- \* Wait state generator
- \* Clocked serial I/O port
- \* 2 channel Direct Memory Access Controller
- \* 2 channel Asynchronous Serial Communication Interface
- \* 2 channel 16-bit Programmable Reload Timer
- \* 12 interrupts
- \* Dual bus interface to 68xx and 80xx support chips
- \* 6.144MHz and 9.216MHz system operation

## MEMORY

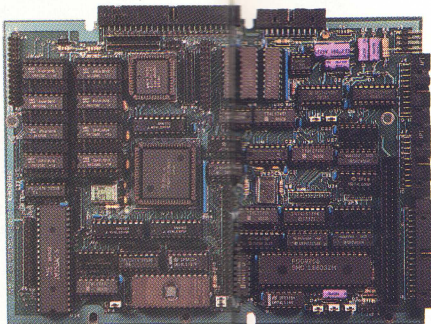
- \* 512K bytes dynamic RAM on board
- \* Memory externally expandable to 4 Mbyte RAM
- \* Either an 8K 2764, 16K 27128, or 32K 27256 EPROM usable
- \* Full function 9K ROM resident monitor

## INPUT/OUTPUT

- \* Console RS-232 serial port with auto-baud rate select to 38,400 baud
- \* Peripheral RS-232 serial port, full handshaking, 150-38,400 baud
- \* Line printer parallel I/O port
- \* 24 bits bidirectional parallel I/O
- \* 19-bit address decoding, I/O port decoding, and dual bus interface brought out to expansion bus connector
- \* Can be directly attached to GT180 640 x 480 color graphics adapter
- \* Fully implemented SCSI hard disk and communications bus interface

## FLOPPY/HARD DISK INTERFACE

- \* Uses Standard Microsystems 9266 disk controller
- \* Compatible with NEC 765A controller
- \* On-chip digital data separator
- \* Can control 3 1/2", 5 1/4", and 8" floppy disk drives - up to 4 in any combination
- \* Handles both FM encoded (single density) and MFM encoded (double density) data
- \* NCR 53C80 SCSI bus controller for hard disk or network communication.



## New 2 Megabyte Memory Expansion Board for SB180FX

Micromint is proud to introduce the **SB180FX 2 Megabyte Memory Expansion Board**. Measuring 5 3/4" x 8" the **FX-2MME** has been engineered to piggy back on the SB180 FX. A total of two **FX-2MME** boards can be stacked together to unlock the full potential of the SB180-FX, and provide a maximum of 4 Megabytes of banked switched RAM. Board is fully socketed and populated with 256K. Uses 120 nsec 256K x 1 DRAM chips.

## SB180FX-2MME

2Mb Memory Expansion Board w/256K \$319.00

The Micromint **SB180FX** is an upwardly compatible performance extension to Micromint's OEM-oriented SB180 computer. The **SB180FX**, only 5.75" by 8", offers a 64180 Z-80 compatible CPU running at 6 or 9MHz, 512K bytes of RAM (expandable to 4 Mbytes), up to 32K bytes of ROM, two 38.4k bps serial ports, a parallel printer port, peripheral expansion bus, three 8-bit bidirectional parallel ports, an industry standard 765A-compatible disk controller for up to four disk drives (any combination of 3 1/2", 5 1/4", or 8" drives), and an SCSI expansion bus for direct connection to a hard disk drive or additional computers. Whether you use the **SB180FX** as the basis for a complete disk-based computer system or use its 32K of ROM space for a battery-powered dedicated control application program, you will appreciate its ability to run standard 8080/8085 and Z-80 software at many times the speed of a Z-80.

The **SB180FX** uses the powerful new Hitachi (CMOS) HD64180. Stellar performance of the HD64180 results from its high clock speed, instruction pipelining, and an integrated Memory Management Unit (MMU). The HD64180 directly addresses 1 Mbyte of memory space.

Because the **SB180FX's** function is compatible with the Z80 instruction set, it can run CP/M 2.2, CP/M Plus, Z-System, MP/M II, TurboDOS, and Oasis operating systems. Popular program development tools for these operating systems - BASIC, FORTRAN, Modula-2, Pascal, PL/1, C, Forth, assembler, etc. - are widely available; thousands of proven application programs will work, too.

**SB180FX-1** SB180FX 9.216 MHz computer board populated w/256K bytes RAM, 9K byte ROM monitor, without SCSI chip. **\$409.00**

**SB180FX-1-30** SB180FX-1 computer board as described above with Z-System software including ZRDOS, ZCPR3, editor, utilities, ZAS assembler, and ZDM debugger, BIOS and ROM monitor sources, and BIOS for SCSI hard disk. Supplied on five 5 1/4" SB180 format DSDD disks. **\$499.00**

Additional 256K plus SCSI chip **\$100.00**  
 XBIOS upwardly compatible BIOS w/DateStamper **\$75.00**

**SB180FX-1 OEM Configured 100 Quantity price \$315.00**



The **SB180** Computer, featured on the cover of the September 1985 BYTE, continues to be one of the most cost-effective single board computers on the market today. Using the 64180 super chip from Hitachi, combined with the increased flexibility of ZRDOS, ZCPR3, and XBIOS, the **SB180** runs the thousands of Z80/8080/8085 programs faster and more efficiently than ever before possible. Completely compatible, yet three times as fast as a 4 MHz Z80, the 9MHz **SB180** can be used as a standalone controller or as a development system running CP/M 2.2, CP/M Plus, Z-System, MP/M II, TurboDOS, or Oasis operating systems.

The **SB180** supports 3 1/2", 5 1/4", and 8" drives simultaneously. Optional format conversion programs facilitate reading and writing alien formats as well.

The **SB180** is designed as a modular system that meets the needs of the end user and the OEM alike.

#### COMM180--S

The **COMM180-S** is a 4" x 5" board that piggy-backs on top of the **SB180** and adds SCSI capability for either hard disk mass storage or communication with other computers. Optional 1200 bps modem also available for

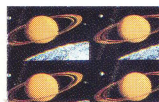
**COMM180 \$150.00**

#### FEATURES:

- \* 9.216MHz 64180 CPU (Z80 instruction supersets), 256K RAM, 8K monitor ROM with device test, disk format, read/write.
- \* Mini/Micro Floppy Controller (1-4 drives, single/Double Density, 1-2 sided, 40/77/80 track 3 1/2", 5 1/4" and 8" drives)
- \* Measures 4" x 7 1/2", with mounting holes
- \* One Centronics printer port
- \* Two RS232C serial ports (75-9600 baud with console port, auto baud rate select.)
- \* Multiple disk formats supported
- \* Menu-based system customization

|                    |                                                                                           |                 |
|--------------------|-------------------------------------------------------------------------------------------|-----------------|
| <b>SB180-1</b>     | 9.216 MHz SB180 single-board computer w/256K bytes RAM and ROM monitor.                   | <b>\$299.00</b> |
| <b>SB180-1-20</b>  | Same as above w/ZCPR3, ZRDOS, BIOS and ROM sources                                        | <b>\$399.00</b> |
| <b>SB180-CABLE</b> | Set of 4 power, terminal, disk and printer cables                                         | <b>\$79.00</b>  |
| <b>SB180-CASE</b>  | Four 1/2 Height 5 1/4" drive enclosure with power supply, mounting brackets and hardware. | <b>\$197.00</b> |
| <b>XBIOS</b>       | New Expanded Banked BIOS w/DateStamper                                                    | <b>\$75.00</b>  |
| <b>SB180-1</b>     | <b>OEM Configuration 100 Quantity Pricing</b>                                             | <b>\$195.00</b> |

The Micromint **GT180 Color Graphics Expansion Board** piggy-backs on top of either the **SB180FX** or the **SB180** computer boards and provides high resolution graphics. Using a Hitachi HD63484 ACRTC and measuring just 5.75" by 8", the **GT180** offers a resolution of 640 x 480 pixels with 16 colors from a palette of 4096, and a video memory of 4 Megabits. The **GT180** has both digital and analog RGB outputs, making it compatible with virtually all standard and multiscan CRT monitors. The **GT180** also has a connector which accommodates an IBM PC compatible keyboard.

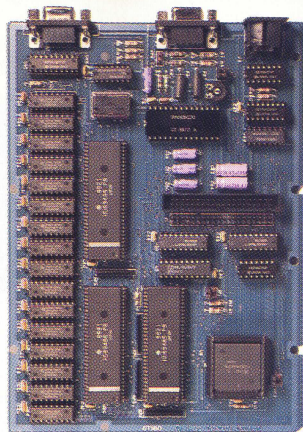


Resolution: 640 x 400



Resolution: 320 x 200

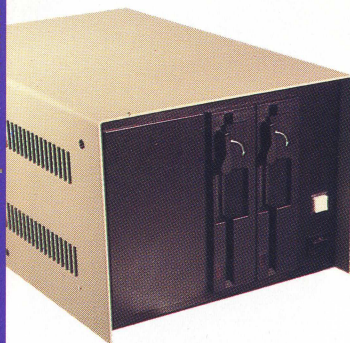
|                    |                                                          |                 |
|--------------------|----------------------------------------------------------|-----------------|
| <b>GT180-1</b>     | Graphic Display Expansion Board (TTL RGB only)           | <b>\$395.00</b> |
| <b>GT180-2</b>     | Graphic Display Expansion Board (TTL RGB and Analog RGB) | <b>\$449.00</b> |
| <b>GT180-MOD2G</b> | Turbo Modula-2 w/Graphix Toolbox                         | <b>\$89.00</b>  |
| <b>GT180-1</b>     | <b>OEM 100 quantity</b>                                  | <b>\$307.00</b> |



#### THE GT180 OFFERS THESE FEATURES:

- \* Hitachi HD63484 ACRTC graphics controller provides intelligent link between computer and user
- \* Only 5.75" x 8", piggy-backs on either **SB180** or **SB180FX** computer.
- \* High resolution at a low cost: 640 x 480 with 16 of 4096 colors.
- \* Hardware drawing commands: LINE, RECTANGLE, POLYLINE, POLYGON, CIRCLE, ELLIPSE, ARC, ELLIPSE ARC, FILLED RECTANGLE, PAINT, PATTERN, and COPY to name but a few.
- \* Automatic translation of logical X-Y coordinates to physical frame buffer addresses.
- \* Fast drawing speed of 2 million pixels per second
- \* Provides fully programmable horizontal split screens and window screen.





SB180 mounts vertically on the side of one drive and includes space and mounting hardware for expansion boards.

The cables supplied with enclosed systems, unlike the generic SB180-CABLE set, are shortened and specially configured to specifically fit this case. Also, instead of a 2 connector floppy disk cable, a 4 drive cable is supplied. All enclosed systems include an auxiliary serial port cable (extends the header connector on the SB180 board to a DB-25 on the rear of the case).

## SB180 SYSTEM CONFIGURATIONS

\*\*1 = Included

|                                | SYST.<br>#1 | SYST.<br>#2H | SYST.<br>#4H | SYST.<br>#5H |
|--------------------------------|-------------|--------------|--------------|--------------|
| SB180-1-20 w/FULL s/w          | I           | I            |              |              |
| SB180FX-1A-30 w/FULL s/w       |             |              | I            | I            |
| GT180-2-MOD2 w/FULL s/w        |             |              |              | I            |
| SB180 Case w/power supply      | I           | I            | I            | I            |
| SB180 ENCL. CABLE SET          | I           | I            | I            | I            |
| SB180 aux port mod cable       | I           | I            |              |              |
| (2) 40 track drives, 5 1/4"    | I           |              |              |              |
| (1) 40 track drive, 5 1/4"     |             | I            | I            | I            |
| (1) 20 Mbyte h.drive w/cont.   |             | I            | I            | I            |
| COMM180-S, hard disk interface |             | I            |              |              |

|                                       |              |               |               |               |
|---------------------------------------|--------------|---------------|---------------|---------------|
| Standard Single Quantity Price:       | \$1000       | \$1464        | \$1540        | \$2039        |
| <b>SPECIAL Enclosed System Price:</b> | <b>\$849</b> | <b>\$1249</b> | <b>\$1359</b> | <b>\$1779</b> |

|                   |                                    |                  |
|-------------------|------------------------------------|------------------|
| <b>SYSTEM #1</b>  | Standard SB180 Enclosed System     | <b>\$849.00</b>  |
| <b>SYSTEM #2H</b> | Enhance SB180 Enclosed System      | <b>\$1249.00</b> |
| <b>SYSTEM #4H</b> | Full SB180FX Enclosed System       | <b>\$1359.00</b> |
| <b>SYSTEM #5H</b> | Full SB180FX/GT180 Enclosed System | <b>\$1779.00</b> |

While the potential configurations of an SB180 system vary we would like to suggest a few cost effective packages which cover the basics yet provide substantial room for customized expansion. All systems are enclosed and assembled in the standard SB180-CASE which is a four half-height 5 1/4" drive case with power supply (13.5"x 9"x 7.25"). The power supply is rated as 3 1/2 Amps at +5 volts and 2 1/2 Amps (5 Amp surge) at +12 volts. The



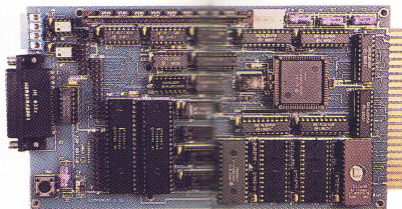
As MICROMINT has expanded the SB180 single board computer line to include the SB180FX and the GT180, our list of available accessories, both hardware and software, has also grown. Listed below you will find some of the available accessories for the SB180 line. Please call if the particular item you are looking for is not listed here.

|                         |                                                                                                                                         |                 |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>BASIC-180</b>        | High-Speed Multitasking BASIC Compiler                                                                                                  | <b>\$250.00</b> |
| <b>SB180-U</b>          | Uniform disk format conversion utility. SB180 only.                                                                                     | <b>\$69.95</b>  |
| <b>SB180-ZMSG/TKBBS</b> | Z-MSG Bulletin Board software                                                                                                           | <b>\$100.00</b> |
| <b>SB180-30</b>         | Z-SYSTEM software for SB180FX includes: ZRDOS, ZCPR3, Editor, Utilities, ZAS Assembler and ZDM Debugger, on four 5 1/4" DSDD diskettes. | <b>\$190.00</b> |
| <b>XBIO5</b>            | Optional extended BIOS for SB180 and SB180FX includes DateStamper                                                                       | <b>\$75.00</b>  |
| <b>SB180-DRVS</b>       | 40 track 5 1/4" half height drive                                                                                                       | <b>\$130.00</b> |
| <b>H-DISK-20</b>        | 20 MByte hard disk drive with SCSI controller                                                                                           | <b>\$390.00</b> |
| <b>SB180-CASE</b>       | Four half-height 5 1/4" drive enclosure enclosure w/power supply, mounting brackets and hardware for use with SB180 or SB180FX          | <b>\$197.00</b> |
| <b>SB180-CABLE</b>      | Set of 4 cables including power, terminal dual disk drive, and printer cables                                                           | <b>\$79.00</b>  |
| <b>SB180-ECAB</b>       | Enclosure cable set                                                                                                                     | <b>\$119.00</b> |



Micromint's newest addition to its family of process control products is called the **BCC180**. The **BCC180** can be used to vastly improve the execution speed of existing Z80 installations or to provide a complete performance solution for new applications. Designed from the ground up for efficiency, low power, and performance, the **BCC180** bridges the gap between Micromint's disk-based SB180 computer line and its BCC-bus process controller products. Using the same HD64180 Z80-compatible CMOS processor as the SB180 and using either high-level language or assembly code, the **BCC180** connects to a variety of off-the-shelf BCC-bus I/O interface boards to function as a complete data acquisition and control system, or to function as a cost-effective single-board controller with abundant on-board I/O and memory.

The **BCC180** contains 6 bidirectional parallel ports and 3 serial ports which communicate via RS-232, RS-422, or RS-485. It can accommodate up to 384K of on-board memory which can be pure application code, monitor and application code, or resident high-level language and application code.



### BCC180 ROM MONITOR

The ROM Monitor provided with the BCC180 is a complete set of utilities and debugging aids. Monitor commands include:

- |                    |                 |
|--------------------|-----------------|
| A-ASCII table      | M-Move Memory   |
| B-Bank select      | O-Output Port   |
| C-Copy EPROM       | Q-Query Memory  |
| D-Download Hex     | R-Read EPROM    |
| File               | S-Set Memory    |
| E-Emulate Terminal | T-Test Memory   |
| F-Fill Memory      | U-Upload Hex    |
| G-Goto Program     | Y-Verify Memory |
| H-Hexmath          | W-Write EPROM   |
| I-Input Port       | X-Exam. CPU     |
| J-Jump to ROM      | Registers       |
| Language           | Y-Yank I/O      |
| L-List Memory      | Registers       |

### BASIC-180 MULTITASKING BASIC COMPILER

The most significant aspect of the BCC180 is its new approach to high-speed, high-level language programming. The BCC180 has an optional **MULTITASKING BASIC COMPILER**, called **BASIC-180**. Using the BCC180's hardware in the most efficient manner to optimize performance, **BASIC-180** can run up to 32 independent program task (each up to 32K bytes) **CONCURRENTLY** and separate on-screen windows may be defined for each task. Programs are fast-compiled to EPROM and are auto-starting.

(See next page for a complete description of BASIC-180)

### TECHNICAL SPECIFICATIONS

#### PROCESSOR AND MEMORY

- \* CMOS HD64180, 8-bit processor, 9.216 MHz (6.144 MHz optional)
- \* Up to 384 Kbytes total memory on-board
- \* 128K of either static RAM (62256) or EPROM (27256)
- \* 256K dynamic RAM SIMM
- \* Full-function 9K ROM Monitor included

#### INPUT/OUTPUT

- \* Console RS-232 serial port with auto baudrate select to 19,200 baud
- \* Peripheral serial port, 150-19,200 baud, selectable RS-232, RS-422 or RS-485
- \* 400 Kbps synchronous serial port, TTL level
- \* 48 bits bi-directional parallel I/O (two 1255 PPIs)
- \* 64K I/O space available through the BCC bus edge connector

#### POWER SUPPLY REQUIREMENTS

- \* +5 volts +/-5% @ 750 mA (fully populated LS)
- \* +12 volts +/- 20% @ 30 mA
- \* -12 volts +/- 20% @ 30 mA

#### DIMENSIONS AND CONNECTIONS

- \* 4.5" by 8.5" board
- \* Dual 22-pin (0.156") edge connector
- \* Compatible with all Micromint BCC-series I/O boards
- \* 25-pin DB-25S connector for RS-232 serial console I/O
- \* 20-pin header for RS-232 serial peripheral port
- \* 4 screw terminals for RS-422/RS-485 serial peripheral port
- \* Two 26-pin headers for six bidirectional parallel ports

#### OPERATING CONDITIONS

- \* Temperature: 0-50°C (32-122°F)
- \* Relative humidity: 10-90% relative humidity, noncondensing

**BCC180-1-20** 9-MHz fully socketed BCC180 Computer/Controller with 32K bytes of static RAM, ROM Monitor, BASIC-180 development software and user's manuals. Additional 256K DRAM available. **\$395.00**

**BCC180-1** OEM Configuration 100 Quantity Price **\$209.00**

**BCC180-PAK** (Evaluation System) 9-MHz BCC180 board with 32K static RAM, ROM Monitor, BASIC-180 development software, MB08 8-slot backplane, CC01 10" card cage, BCC180-PGM1, UPS10 35-Watt switching power supply and user's manuals. **\$595.00**

**BCC180-PGM1** Auxiliary 27256 EPROM Programmer board for BCC180. **\$89.00**



## BASIC-180 MULTITASKING BASIC COMPILER

The most significant aspect of the BCC180 is its new approach to high-speed, high-level language programming. The BCC180 has an optional **MULTITASKING BASIC COMPILER**, called **BASIC-180**. Using the BCC180's hardware in the most efficient manner to optimize performance, **BASIC-180** can run up to 32 independent program tasks (each up to 32K bytes) **CONCURRENTLY** and separate on-screen windows may be defined for each task. Programs are fast-compiled to EPROM and are auto-starting.

**BASIC-180** comes in two flavors: disk-based, for development on an SB180/SB180FX; and ROM-based, for development directly on the BCC180 board itself. Using the disk-based version and an SB180, it's possible to write and, depending upon the I/O required, test programs while having the convenience of a full-screen editor for writing source code and disk drive for saving the code. The ROM-resident version for **BASIC-180** supports all the features of the disk-based version except, instead of saving code to disk, the ROM-based compiler saves it to EPROM. Monitor utilities facilitate transfer of source and object code between SB180 (disk-based) and BCC180 (ROM-based) systems.

### BASIC-180 - Multitasking Controller - BASIC COMMANDS

| Direct Commands | Statements | Functions |
|-----------------|------------|-----------|
| BYE             | CALL       | INPUTS    |
| CLS             | CANCEL     | REM       |
| COMPILE         | CHAIN      | INTEGER   |
| CONSOLE         | CLOSE      | INTMODE   |
| DISK-           | CLS        | INTON     |
| COMPILE         | CODE       | INTOFF    |
| EDIT            | CURSOR     | JVECTOR   |
| END             | DATA       | NEXT      |
| ERROR           | DEF        | OFF ERROR |
| GO              | DEFMAP     | ON ERROR  |
| LIST            | DELETE     | ON GOTO   |
| LOAD            | ERASE      | ON GOSUB  |
| MAPCOMPILE      | EXIT       | OPEN      |
| NEW             | FIELD      | OUT       |
| NOERR           | FILE       | POOOUT    |
| PRINTER         | FNEND      | POKE      |
| RUN             | FOR/NEXT   | PRINT     |
| SAVE            | FPRINT     | PRIORITY  |
| STATUS          | GOSUB      | PUT       |
| TICS            | GOTO       | RANDOM-   |
| VARIABLE        | IF/THEN    | READ      |
|                 | INPUT      | REAL      |
|                 |            | RETURN    |
|                 |            | RGET      |
|                 |            | RUN       |
|                 |            | SEEK      |
|                 |            | SETPIO    |
|                 |            | STOP      |
|                 |            | STRING    |
|                 |            | SYSTEM    |
|                 |            | TASK      |
|                 |            | TRACE ON  |
|                 |            | TRACE OFF |
|                 |            | VECTOR    |
|                 |            | WAIT      |
|                 |            | WCLEAR    |
|                 |            | WFRAME    |
|                 |            | WINDOW    |
|                 |            | WPOKE     |
|                 |            | WSAVE     |
|                 |            | WSELECT   |
|                 |            | WUPDATE   |

**BCC180 DEV.** -- BASIC-180 multitasking BASIC compiler for ROM or disk-based development. Contains both BASIC-180 EPROM for direct use on BCC180 board and BASIC-180 diskette for direct use or software development on the SB180. Includes user's manual. The compiled code may be freely used without further license.

**\$250.00**

The **BCC52** Computer/Controller is Micromint's hottest selling standalone single board microcomputer. Its cost-effective architecture needs only a power supply and terminal to become a complete development or end-use system, programmable in BASIC or machine language. The **BCC52** uses Micromint's new 80C52-BASIC CMOS microprocessor which contains a ROM resident 8K byte floating point BASIC-52 interpreter.

The BCC52 contains sockets for up to 48K bytes of RAM/EPROM, an "intelligent" 2764/128 EPROM programmer, 3 parallel ports, a serial terminal port with auto baud rate selection, a serial printer port, and it is bus compatible with the full line of BCC-bus expansion boards. The BCC52 bridges the gap between expensive programmable controllers and hard-to-justify price sensitive control applications. BASIC-52's full floating point BASIC is fast and efficient enough for the most complicated tasks, while its cost effective design allows it to be considered for many new areas of implementation. It can be used both for development and end-use applications.

Since the BASIC-52 is bus oriented, it supports the following Micromint expansion boards in any of Micromint's card cages with optional power supplies:

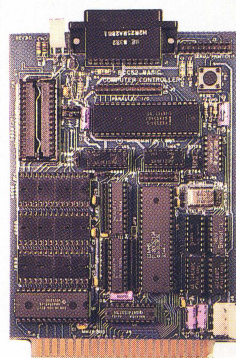
|                                                   |                                                   |
|---------------------------------------------------|---------------------------------------------------|
| BCC22 Smart terminal board                        | BCC40R 8-Channel relay output board               |
| ADP500 User vocabulary, digitized speech board    | BCC53 Memory and 6 port I/O expansion board       |
| BCC25 LCD display board                           | BCC13 8-bit and BCC30 12-bit A/D converter boards |
| BCC33 3 port I/O expansion board                  | BCC18 Dual channel serial I/O board               |
| BCC40D 8-Channel optoisolated I/O expansion board |                                                   |

|                   |                                                                                  |                 |
|-------------------|----------------------------------------------------------------------------------|-----------------|
| <b>BCC52</b>      | <b>BASIC 52 Controller Board</b>                                                 | <b>\$189.00</b> |
| <b>BCC-SYST.5</b> | <b>"52 PAK" Starter System includes: BCC52,ROM A&amp;B UTIL.,CC01,MB08,UPS10</b> | <b>\$449.00</b> |

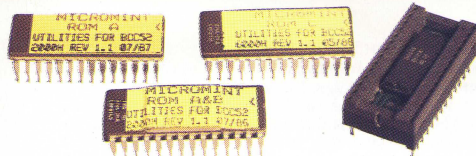
### BCC52 OEM 100 Quantity Price -- \$149.00

**BCC52C** Lower power all CMOS version of the BCC52 **\$199.00**

**NOTE:** The BCC52 series is available in Industrial Temperature Range, fully tested at temperature. Prices start as low as \$294.00 in single quantities. Be sure to call for a quote on your specific Industrial OEM requirements.







Since the introduction of Micromint's BCC52 Computer/Controller in the Fall of 1985, a number of ROM utilities and accessory boards have been designed to work on all BCC52 and BCC52x products. Utilities are supplied on separate EPROMs but each utility program executes at a different starting address. Multiple utilities can be programmed into a single EPROM using features provided in ROM A&B. Pictured above are ROM utilities A, A&B, C, and a BCC52 DS1216C Real Time Clock.

The 2764 expansion ROMs plug directly into the BCC52 or the BCC53 to provide options as follows:

**ROM A**  
**COMMANDS**  
(Follows BASIC-52 standard syntax)  
ASMS -- A single line assembler  
CHANGE -- Change or modify contents of memory location  
DIS -- Display region of external memory, hex and ASCII  
EDIT -- Edit specific line in BASIC text file  
HEXL -- Hex load command to load Intel hex file to console  
HEXS -- Hex save command outputs an Intel hex file to console  
RENUM -- Renumbers the lines in a BASIC file

**COMMANDS and/or STATEMENTS**  
BLAST -- Used to program an EPROM from a specified block of memory  
MOV -- Used to move blocks of memory  
FILL\* -- Fills a block of memory with a specified byte of data  
VERIFY -- Does a byte by byte comparison of data stored in two blocks of memory

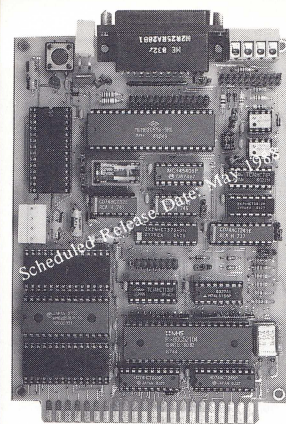
**ROM A&B** Utilities ROM A&B includes all of the features of ROM A and adds a full resident assembler and text editor.

**ROM C** ROM C contains three software support utilities. The first is a set of I/O user called routines which facilitate program interaction with the BCC40D optoisolated I/O control and the BCC40R relay output boards. The ROM C firmware automatically scans and writes all input and output modules under interrupt control and provides change of state direction for input lines. Requires real time clock or BCC53 to use this feature.

The second utility is a software realtime clock/calendar program derived from an external 60 Hz clock source (only functions with BCC53 installed). Data consisting of year, month, day, hours, minutes, and seconds are automatically stored in the BCC52 data memory for reading at any time by the user program. Updating of the clock values is handled in the background with interrupt driven code.

The third utility supports a DS-1216C hardware realtime clock/calendar installed in a RAM socket. Data consisting of year, month, day, hours, minute, and seconds are available to the user program at any time.

|                                                |                                                              |                 |
|------------------------------------------------|--------------------------------------------------------------|-----------------|
| <b>BCC52-ROM A</b>                             | ROM A Utilities                                              | <b>\$49.95</b>  |
| <b>BCC52-ROM A&amp;B</b>                       | ROM A&B Utilities                                            | <b>\$100.00</b> |
| For ROM A or A&B, specify 8052AH or 80C52 use. |                                                              |                 |
| <b>BCC52-ROM C</b>                             | ROM C Utilities                                              | <b>\$34.00</b>  |
| <b>BCC52-OK</b>                                | BCC52 Real time clock and ROM C                              | <b>\$69.00</b>  |
| <b>BCC52-BK</b>                                | BCC52 Real time clock w/8K byte battery backed RAM and ROM C | <b>\$79.00</b>  |



The Micromint **CMOS eXpanded BASIC-52 Computer/Controller** is a standalone single board microcomputer which measures 4 1/2" x 6 1/2" and takes the best features of our original BCC52 and adds attributes like RS-485 communication and more memory in the same size package. Like the BCC52, the **BCC52CX** uses Micromint's new 80C52-BASIC 8-bit CMOS microprocessor which contains a ROM resident 8K byte floating point BASIC-52 interpreter and needs only a power supply and terminal to become a complete system programmable in BASIC or machine language.

Allowing use of 32K x 8-bit chips, the **BCC52CX** has sockets for 64K bytes of RAM and 64K bytes of EPROM. An onboard

"intelligent" 27C256 programmer uses standard and fast programming algorithms. Console serial support can be directed to RS-232 or RS-485 drivers. An auxiliary RS-232 serial output port supports serial printer output, and three 8-bit TTL bidirectional parallel ports are available through an onboard PPI. The **BCC52CX** is Micromint BCC-bus compatible, allowing all of Micromint's BCC-bus peripheral boards to be used with the **BCC52CX**.

#### Power Supply Requirements

- \* +5V +/- 5% 105 mA
- \* +12V +/- 20% @ 7 mA
- \* -12V +/- 20% @ 3 mA
- \* +12.5V +/- 2% @ 60 mA (only for EPROM programming)

#### Operating Conditions

- \* 0-50°C (32-122°F)
- \* relative humidity: 10-90% noncondensing

#### Connections

- \* dual 22-pin (0.156") edge connector for BCC-bus
- \* DB-25S console connector
- \* 2x10 header for AUX serial out
- \* 2x13 header for PPI parallel I/O
- \* 1x4 Molex header power supply
- \* 1x2 Molex header EPROM programming power
- \* 1x4 screw terminal for RS-485

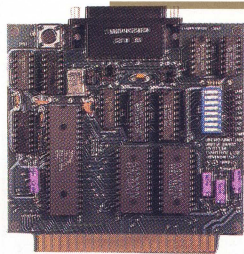
**BCC52CX** CMOS, Expanded BCC52 Computer/Controller **\$259.00**  
100 Quantity OEM configuration **\$159.00**



The Micromint **BCC53** expansion board integrates several useful features into a single package. Designed to work in conjunction with the **BCC52**, **BCC11**, and **BCC180** computer/controllers (the **BCC53** provides only I/O and clock expansion for a **BCC180** and **BCC52CX**), the **BCC53** expansion board provides the user with up to 62K bytes of memory expansion, six additional 8-bit bidirectional TTL parallel I/O ports, and a 60 Hz crystal controlled time base for real time clock control applications. The **BCC53** upgrades a **BCC11** Z8-based system to a total of 48K of RAM memory and gives the standard **BCC52** an additional 62K of code space, freeing the RAM on the processor board for BASIC development and program data.

The **BCC53** expansion board has 8 RAM/EPROM sockets which uses 8K x 8 devices. When configured as program (code) space, the **BCC53** provides a convenient site for installing utility ROMs and allows all of them to be resident in a system concurrently without modification.

**BCC53** Multifunction Expansion Board w/OK **\$160.00**

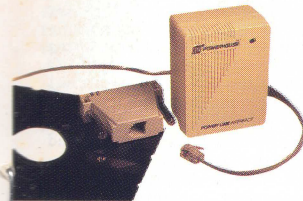
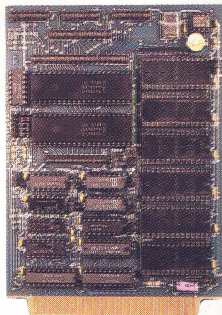


The **BCC11 Z8 Basic Computer/Controller** measures only 4" by 4 1/2" and includes a tiny BASIC interpreter, or optional FORTH compiler, up to 6K bytes of RAM and EPROM, one RS-232 serial port with switchable baud rates and two parallel ports. BASIC or machine language programming is accomplished simply by connecting a CRT terminal. Programs can be transferred to 2732 EPROMs with an optional

EPROM programmer for auto start applications. The **BCC11** is Micromint BCC-bus compatible and functions with all available peripheral expansion boards.

- \* Uses Z8671 or Micromint Z8 FORTH single chip microcomputer
- \* 110-9600 bps serial port
- \* BCC-bus expansion for 62K of memory and 64K of I/O
- \* Consumes only 1.5 watts at +5, +12 & -12V.

**BCC11** BASIC System Controller **\$139.00**  
**BCC11 OEM 100 Quantity Price \$89.00**  
**BCC20** Z8 FORTH chip **\$39.00**



X-10 (USA) Inc. has developed a new OEM AC powerline interface module. Using it in conjunction with off-the-shelf appliance and lamp control modules, computer systems can now remotely control AC-powered devices. Micromint has added the necessary software to use this control module with the **BCC52**, **BCC180**, and the IBM PC. Simply plug the X-10 AC interface module into any convenient outlet, connect the optional

RJ-11 cable between it and the PC or **BCC180/BCC52** and directly control any AC-line-powered device.

The software consists of subroutines, callable from high-level or assembly language, which execute the various permutations of ON, OFF, DIM, and BRIGHT commands. Software is supplied on EPROM (**BCC180** and **BCC52**) or diskette (IBM PC) with both executable code and source code provided.

|                |                                                |                |
|----------------|------------------------------------------------|----------------|
| <b>BCX/52</b>  | AC Interface Module and <b>BCC52</b> software  | <b>\$59.00</b> |
|                | Item above with <b>BCC52</b> cable             | <b>\$79.00</b> |
| <b>BCX/180</b> | AC Interface Module and <b>BCC180</b> software | <b>\$59.00</b> |
|                | Item above with <b>BCC180</b> cable            | <b>\$79.00</b> |
| <b>BCX/PC</b>  | AC Interface Module and IBM PC software        | <b>\$59.00</b> |
|                | Item above with IBM PC printer port cable      | <b>\$69.00</b> |

## BCC-bus SUPPORT COMPONENTS and POWER SUPPLIES

### Mother Boards

|                            |                                         |                |
|----------------------------|-----------------------------------------|----------------|
| <b>MB04</b> <sup>NEW</sup> | BCC-bus 4-slot Mini Motherboard         | <b>\$69.00</b> |
| <b>MB04C</b>               | MB04 Mini Motherboard with 6" card cage | <b>\$99.00</b> |
| <b>MB08</b>                | BCC-bus 8-slot Full Motherboard         | <b>\$85.00</b> |

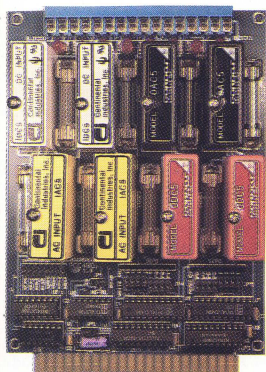
### Card Cages

|             |                                 |                |
|-------------|---------------------------------|----------------|
| <b>CC01</b> | 10 inch Card Cage for one MB08  | <b>\$59.00</b> |
| <b>CC02</b> | 19 inch Card Cage for two MB08s | <b>\$79.00</b> |

### Power Supplies

|                  |                                                                                                      |                |
|------------------|------------------------------------------------------------------------------------------------------|----------------|
| <b>UPS05</b>     | Card cage power supply designed for a 2 or 3 board system; 1A @ 5V, .3A @ +12V, .1A @ -12V.          | <b>\$79.00</b> |
| <b>UPS10</b>     | Heavy duty switching power supply used for an entire BCC system; 5.5A @ 5V, .7A @ +12V, .3A @ -12V.  | <b>\$69.00</b> |
| <b>UPS11</b>     | Universal power supply used for single board applications; .9A @ 5V and .3A @ +12V and .1A @ -5V.    | <b>\$19.00</b> |
| <b>UPS 21/12</b> | 21V & 12.5V Programming power supply used for EPROM programming on the <b>BCC52</b> ; +/- 2% @ 200mA | <b>\$49.00</b> |

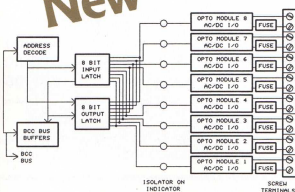




background under an application program using high-speed interrupt-driven ROM C firmware. This firmware sets aside a table in memory which reflects the status, setpoints, and change-of-state flags of the I/O modules. Interaction among programs within a multiboard BCC40x system merely consists of reading or setting these memory table values.

Each optoisolated channel is fused and has screw contacts for direct connection to the controlling device and/or the power source. Both input or output modules, and AC or DC functions can be intermixed on the same BCC40D board.

**New**



#### SPECIFICATIONS

- \* Latched outputs
- \* Uses industry-standard OAC5, ODC5, IAC5, IDC5 type modules
- \* Dual-ported module addressing
- \* LED on/off indicator on each channel
- \* Can be used concurrently with BCC40R and other BCC-bus peripherals
- \* Operates on +5V
- \* Operating conditions:  
temperature: 0-50°C (32-122°F)  
relative humidity: 10-90% non-condensing
- \* 4.5" x 6" board
- \* dual 22-pin (0.156") edge connector
- \* 16-terminal screw connector (#14 wire)

**BCC40D/0** without modules \$139.00  
**BCC40D/4** with 4 modules \$189.00  
**BCC40D/8** with 8 modules \$229.00

**OEM 100 Quantity  
pricing starts at \$95.00**

The Micromint **BCC40R** is an 8-channel relay output expansion board designed for use with Micromint's family of BCC-bus Computer /Controllers. Using efficient mechanical relays, the **BCC40R** provides contact-closure on/off control of eight AC- or DC-powered devices for data acquisition and control applications.

Up to 16 **BCC40R** boards can be used together in a single system to provide a total of 128 relay output channels. The relays are controlled by writing to a board-specific I/O address. The relays on a **BCC40R** board can be controlled either as a set of eight relays at a single I/O address or individual relays at eight separate I/O addresses.

The **BCC40R** can be directly controlled from BASIC or it can function completely in the background under an application program using high speed interrupt-driven ROM C firmware. This firmware sets aside a table in memory which reflects the status and setpoints of the relays. Interaction among programs within a multiboard BCC40x system merely consists of reading or setting these memory table values.

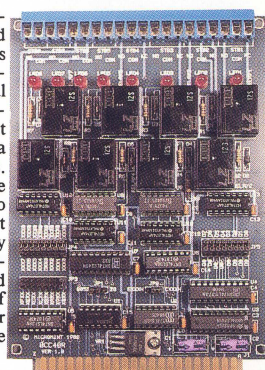
The eight relay outputs have screw contacts for direct connection to the controlling device and/or the power source. Four of the relays have single-pole-double-throw (SPDT) output connections and four relays have single-pole-single-throw (SPST) output connections.

#### SPECIFICATIONS

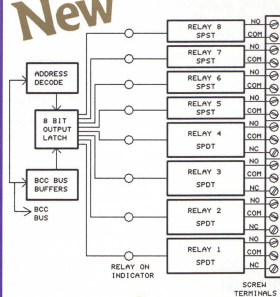
- \* Contacts rated for: 1/10 HP, 3A 120V resistive, or 3A 30VDC
- \* Latched relay outputs
- \* LED on/off indicator on each channel
- \* Power on/off failsafe: No arbitrary closures on power up/down
- \* Can be used concurrently with BCC40D and other BCC-bus peripherals
- \* Operates on +12V
- \* Operating conditions: 0-50°C (32-122°F) relative humidity: 10-90% noncondensing
- \* 4.5" x 6" board
- \* dual 22-pin (0.156") edge connector
- \* 20-terminal screw connector (#14 wire)

**BCC40R**

**8-Channel relay output board  
OEM 100 Quantity price \$124.00**

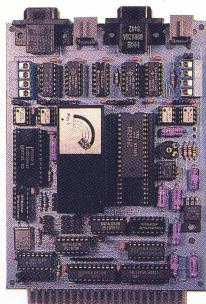


**New**



**\$169.00**





300, or 1200 bps communication and compatible with Bell 103 and Bell 212A standards. The hard-wired serial interface uses an industry-standard 8251A USART (Universal Synchronous/Asynchronous Receiver/Transmitter), capable of supporting asynchronous serial communications at speeds up to 19.2 kbps and synchronous serial communications at speeds up to 64k bps.

The **BCC18** can be configured with two MOSARTs, two 8251As, or one of each. Up to 16 **BCC18s** can be used in a single system (for a total of 32 serial ports).

#### MOSART

- Connects directly to any phone line
- Sync byte detection/insertion
- DTMF or pulse dialing
- Extensive built-in diagnostics
- DTMF reception and decoding
- Telephone-line diagnostics
- Call progress monitoring
- Synchronous and asynchronous operation
- Parity generation/checking
- Voice synthesis capability (XE1203 only)

#### 8251A

- Full-duplex, double-buffered transmitter and receiver
- Fully programmable with several speed and character modes
- Error detection for parity, overrun, and framing
- False start bit detection; automatic break detect and handling
- Supports bsync
- Bit rate is software programmable using an on-board 8253 counter/timer
- RS-232C, RS-422, and RS-485 supported

#### Software

- MOSART and 8251A use the same program interface, so most software will work with both
- Optional support software for the BCC32 and BCC180 is available that makes it easy to access and use most of the features of the MOSART and 8251A from within user-written programs

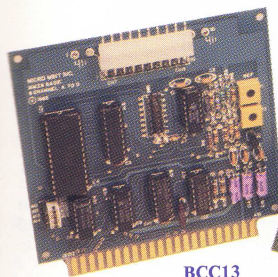
**BCC18S** OEM configuration fixed dual 8251 RS-232 only **\$175.00**  
serial port board

**BCC18S OEM 100 Quantity Price \$134.00**

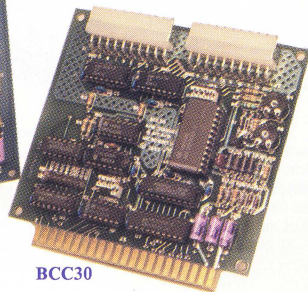
|                 |                                      |                 |
|-----------------|--------------------------------------|-----------------|
| <b>BCC18U-1</b> | 8251/8251 Dual RS-232/485 serial     | <b>\$209.00</b> |
| <b>BCC18U-2</b> | 8251/1201 Modem and serial port      | <b>\$359.00</b> |
| <b>BCC18U-3</b> | 1201/1201 Modem /Modem board         | <b>\$499.00</b> |
| <b>BCC52/18</b> | BCC52 serial port utilities software | <b>\$75.00</b>  |
| <b>BCC08</b>    | Single channel UART serial board     | <b>\$149.00</b> |

The **BCC18** is a general-purpose dual-serial-port interface board for use with the Micromint BCC-bus. Optional support software is available for the BCC52 and BCC180 computer/controllers.

The **BCC18** Serial Board contains two serial interfaces. Each interface can be either a 110/300/1200-bps modem, or a hard-wired RS-232C/RS-422/RS-485 interface. The modem interface uses a Xecom XE1201/XE1203 MOSART (Modem Synchronous/Asynchronous Receiver/Transmitter), capable of 110,



**BCC13**



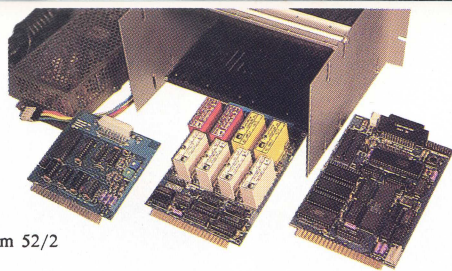
**BCC30**

Micromint's **BCC30 12-Bit Plus Sign Analog to Digital Converter Board** is a sixteen-channel high-speed unit designed for use with all BCC-bus Computer/Controllers. The **BCC30** monitors up to eight differential (or 16 single ended) analog signals in a bipolar range of -5 to +5 volts. Like the **BCC13**, the **BCC30** A/D Converter board is memory mapped, so it is easily accessible from BASIC, Forth, or assembly language and up to 16 boards can be used in a single system. Channels are individually addressable and can be converted at up to 10,000 samples per second with a resolution of 1.2 mV.

Micromint's **BCC13 8-Bit Analog to Digital Converter Board** is an eight-channel 8-bit A/D board designed for use with the Micromint's BCC-bus Computer/Controllers. The **BCC13** monitors up to eight unipolar (0 to 10 volts) or bipolar (-5 to +5 volts) analog signals and converts data at 10,000 samples per second. The **BCC13** is ideal for cost sensitive applications where moderate speed and moderate (40 millivolt) resolution are required.

|              |                               |                 |
|--------------|-------------------------------|-----------------|
| <b>BCC13</b> | 8-bit, 8-channel A/D Board    | <b>\$129.00</b> |
| <b>BCC30</b> | 12-bit, 16-channel A/D board  | <b>\$197.00</b> |
| <b>BCC13</b> | <b>OEM 100 Quantity Price</b> | <b>\$89.00</b>  |
| <b>BCC30</b> | <b>OEM 100 Quantity Price</b> | <b>\$129.00</b> |





System 52/2

Micromint offers various data acquisition and control systems for each of its Computer/Controller boards in cost-effective configurations. The enclosed configurations range from complete development systems to off-the-shelf prepackaged process control systems designed for industrial applications. All preconfigured systems provide significant savings over the individually purchased items.

## Preconfigured BCC52 Computer/Controller Systems

**System 52/1** - "52 PAK" Starter System includes: **\$449.00**  
BCC52, ROM A&B Utilities, CC01, MB08, UPS10.  
A \$502 value for **\$449.00**

**System 52/2** - Standard Control System includes: **\$669.00**  
BCC52, 2 BCC40D/8 boards, BCC13, CC01, MB08, UPS10.  
A \$760 value for **\$669** (\$50 to substitute BCC30)

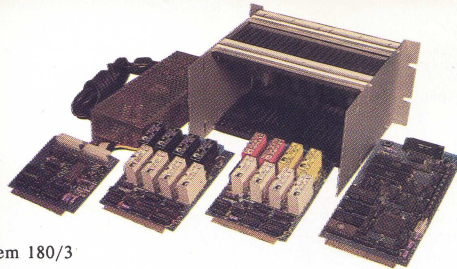
**System 52/3** - OEM Control System includes: **\$1100.00**  
BCC52, 2 BCC40D/8 boards, BCC30, BCC53, MB08, CC01, UPS10 and ROM C utilities.  
A **\$1251** value for **\$1100**

## Preconfigured BCC180 Computer/Controller Systems

**System 180/1** - "180 PAK" Starter System includes: **\$595.00**  
BCC180-1, BCC180-PGM1, BASIC-180, CC01, MB08, UPS10  
A **\$697** value for **\$595**

**System 180/2** - Standard Control System includes: **\$769.00**  
BCC180-1, BCC40D/8, BCC13, CC01, MB08, UPS10  
A **\$900** value for **\$769** (\$50 to substitute BCC30)

**System 180/3** - OEM Control System includes: **\$1039.00**  
BCC180-1, 2 BCC40D/8 boards, BCC30, CC01, MB08, UPS10  
A **\$1197** value for **\$1039**



System 180/3

## Preconfigured BCC11 Computer/Controller System

**System 11/1** - BCC11 Development System includes: **\$509.00**  
BCC11, BCC53, CC01, MB08, UPS10, MR0X\*

A **\$587** value for **\$509**

\* **NOTE:** when ordering the BCC11/1 system please specify one of the following three Cross Assemblers:

- 1) MR01 -- CP/M 8" Diskette
- 2) MR02 -- Apple II CP/M 5 1/4" Diskette
- 3) MR04 -- IBM PC 5 1/4" Diskette

Micromint's new general purpose dual serial port interface board BCC18 (featured on page 20 of this catalog) is available in a special dual serial port OEM configuration. This BCC18S board can be added to any BCC system order for a price of \$150. Add \$75.00 for BCC18S communications utilities software.

BCC180 Computer/Controller systems 2 & 3 do not include BASIC-180 or the ROM monitor software. The BASIC-180 software with ROM monitor and manuals can be ordered separately at the time you are placing your system order for a price of \$139.00. This price is only available when accompanying BCC180 system orders.

All BCCXX systems 2 and 3 are OEM configurations and are supplied without manuals. Complete manual sets are available separately. When placing your system order please indicate if manual sets are desired.

## BCC MANUAL SETS

|                  |                                                                |                |
|------------------|----------------------------------------------------------------|----------------|
| <b>BCC99/11</b>  | Complete set of manuals for BCC11 and all related peripherals  | <b>\$39.00</b> |
| <b>BCC99/52</b>  | Complete set of manuals for BCC52 and all related peripherals  | <b>\$39.00</b> |
| <b>BCC99/180</b> | Complete set of manuals for BCC180 and all related peripherals | <b>\$59.00</b> |



**A Smart Terminal  
in a small  
(and inexpensive)  
package**

The Micromint **BCC22 TERM-MITE** is a complete full duplex 24 line by 80 character smart video terminal on a 4" x 6 1/2" board.

The **BCC22** supports either a scanned matrix or ASCII encoded keyboard and has both composite and separated sync outputs.

Why pay \$500 or more for a smart terminal? The **TERM-MITE ST** offers you all of the following on a single board for less than 1/3 the price.

- \* 128 displayable characters
- \* 24 lines x 80 characters
- \* Separate transmit & receive baud rates (110-19,200bps)
- \* CRT refresh at 50 - 60 Hz
- \* Supports scanned and encoded keyboards
- \* 11 Graphic characters
- \* 25th line reverse video status display
- \* 21 escape functions
- \* 14 control functions
- \* Directly drives composite video separated sync monitor

**EDITING FEATURES:** typeover, clear screen to space or null, erase to end of page, erase to end of line, absolute cursor addressing.

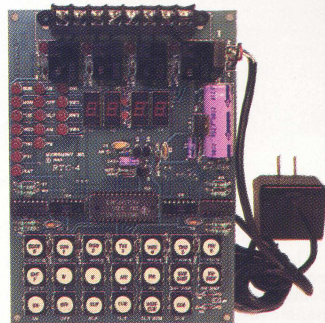
**VIDEO ATTRIBUTES:** reverse video, half intensity, double height, double width, underlined, blinking and blank characters.

**BUS CONFIGURATION:** Micromint BCC compatible or no bus connection necessary for standalone operation with parallel keyboard.



|              |                                        |                 |
|--------------|----------------------------------------|-----------------|
| <b>BCC22</b> | <b>TERM-MITE Smart Terminal Board</b>  | <b>\$249.00</b> |
| <b>BCC22</b> | <b>Parallel Encoded ASCII keyboard</b> | <b>\$79.00</b>  |

**RTC-4 Programmable Controller** provides a cost effective and simple way to provide dedicated control in your home or factory without tying up all of your expensive computer equipment or programmable controllers. The **RTC-4** is a four channel, time activated programmable controller. The **RTC-4** has keyboard entry, accepts daily or weekly programmable setpoints (features memory display of same), offers fixed or interval timers, displays time of day plus status of all four outputs, and operates at 50 or 60 Hz. It includes an LED display, a 20 key keyboard, four independent output relays (contacts rated at 3 amps @120 volts) with screw terminal connections, and power supply. Save money on your next application by using low cost dedicated control.



|              |                                             |                 |
|--------------|---------------------------------------------|-----------------|
| <b>RTC01</b> | <b>RTC-4 4-Channel Real Time Controller</b> | <b>\$149.00</b> |
|--------------|---------------------------------------------|-----------------|

Micromint proudly announces the new **ADP500 Digitized Audio board** and IBM PC based development system. Using the **ADP500**, any computer control system now has the ability to produce clear and understandable speech, alarm bells and whistles, time marks, safety warnings, hi-limit warnings, verbal data pronouncements, or any other audible action. The **ADP500** can be used with any BCC-bus processor. It also functions standalone via serial or parallel input.

The **ADP500** has its own onboard processor which reads the digitized audio data from EPROMs and reproduces the appropriate sounds. Individual sounds, phrases, or words are given a single byte tag number. To say a word or sound, the host processor merely sends the tag number to the **ADP500's** I/O address. Up to 2.93 minutes of speech vocabulary or audio can be stored onboard the **ADP500**.

We have a ready-to-use 200 word ROM vocabulary available so you can fire up the **ADP500** and go, or you can create your own custom stored sounds using the **ADP500** PC development board.

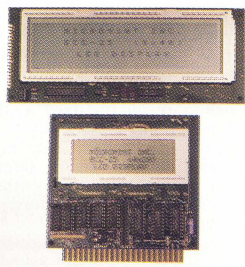
|                 |                                            |                 |
|-----------------|--------------------------------------------|-----------------|
| <b>ADP500</b>   | <b>Digitized audio/speech output board</b> | <b>\$195.00</b> |
| <b>ADP500V1</b> | <b>200 word vocabulary on PC disk</b>      | <b>\$39.00</b>  |



The Micromint **BCC55** prototyping board provides all of the buffering and address decoding necessary to interface user designed circuits properly to the BCC-bus. The prototyping area consists of approximately 12 square inches of component holes laid out on a .1 inch grid (room for 24 16-pin ICs). The BCC PROTO board gives the user a head start on adding custom I/O and is compatible with all Micromint BCC-bus processor boards.

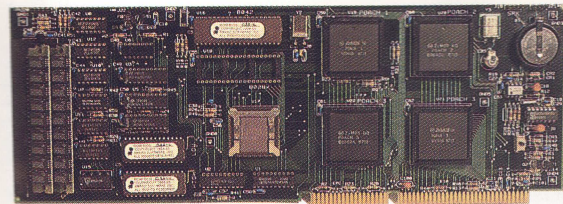
**BCC55** Prototyping Board **\$79.00**

The Micromint **Liquid Crystal Display (LCD)** accessory board measures 4.5" x 4.375" and has been designed to operate with the BCC52 Computer/Controller to provide keyboard entry and a programmable graphic display of system functions in alphanumeric form. The **LCD** board mounts directly to the BCC-bus, and the software driver resides in a Utility ROM on the BCC52 or the BCC53.



Available with either the Hitachi LM 0441 four line by twenty character LCD panel (mounts directly on the board) or the Hitachi LM 213B eight line by forty character display (separate mount via a 40 pin ribbon cable), this accessory board permits the operator to include graphic or alphanumeric output in BASIC language control applications. The board incorporates an LCD output driver and supports an ASCII parallel keyboard input driver. It features adjustable contrast, a standard character set, and a hardware interrupt select for the keyboard strobe.

**BCC25-4** BCC25 with 4 x 20 LCD **\$159.00**  
**BCC25-8** BCC25 with 8 x 40 LCD **\$229.00**  
**BCC22K** Parallel encoded ASCII keyboard **\$79.00**



**Low Power!**  
**Expansion Card Form Factor!**  
**100% AT Compatible!**

Micromint's **OEM-286**, featured on the cover of the September 1987 issue of BYTE, is a complete PC/AT-CPU and more. The **OEM-286** is a low power, 100% AT compatible CPU board which has been specifically designed for OEM use within the industrial and business sectors. The **OEM-286** features the ZYMOS CMOS POACH set and 100% compatible Award BIOS. The development of the POACH chip set has allowed the 129 ICs on a standard AT to be reduced to 20 ICs and two SIMMs. What this means for you is:

- 1) The overall size of a standard AT/CPU has been condensed into the expansion card form factor. (13 1/4" x 5 7/8")
- 2) Power requirements are less than 1 A @ 5 volts.
- 3) OEM-286 plugs into a passive backplane for easy connection to other expansion peripherals.

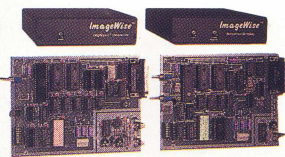
The **OEM-286** is available in both 8 and 10 MHz versions and comes with the Award BIOS.

- \* 100% AT compatible
- \* 80286 Microprocessor, 8 or 10 MHz
- \* 80287 Coprocessor optional
- \* 64K bytes of ROM, can accommodate 128K bytes
- \* 512K bytes of onboard RAM
- \* Keyboard Controller
- \* Award BIOS included
- \* Expansion card form factor
- \* Standard interface to the System Expansion Bus
- \* Battery backed real time clock
- \* Detachable mounting bracket

**OEM-286/8 or OEM-286/10** 8MHz or 10MHz AT/CPU **\$620.00**

**100 Quantity OEM price \$559**  
**1000 Quantity OEM price \$495**





The Micromint **ImageWise Digital Imaging System** is the most cost effective, high performance gray scale video digitizing system on the market today. The **ImageWise** system has been designed to function intelligently as a standalone digitizer or as an integral component of a complete tele-

imaging system. **ImageWise's** serially bit mapped digitized pictures give it almost universal compatibility with any computer capable of attaching to a modem or terminal. Critical system functions such as image resolution and picture update can be controlled and commanded remotely from the **ImageWise Receiver/Display** or any computer. Images are transmitted and received serially thereby eliminating all bus dependence. The system also incorporates data compression to considerably reduce image transmission time. The **ImageWise** system consists of two separate units, a digitizer/transmitter and a receiver/display, which can be used independently or together.

#### **ImageWise Digitizer/Transmitter**

The **ImageWise Digitizer/Transmitter** is a true "frame grabber" which takes only 1/60th of a second to capture an image. It accepts the video signals from a standard television camera (either monochrome or color), VCR, laserdisc player, camcorder, etc. and stores the picture as 244 lines of 256 pixels with 64 levels of gray scale (256 x 244 x 6 bits). The **ImageWise Digitizer/Transmitter** board converts the stored video image to RS-232 serial data which can be transmitted at the rate of 300bps to 57.6kbps (selectable) to any computer or to the **ImageWise Receiver/Display** board. When used as a stand-alone video digitizer, **ImageWise** can be connected to the serial port of an IBM PC or any computer and be commanded to send high, medium and low resolution images for storage, processing, or direct display. **ImageWise** pictures can also be displayed (in reduced gray scale) on computers which allow enhanced graphics such as the Macintosh, IBM PC EGA, Commodore Amiga, and Atari ST or used with full resolution and gray scale in popular desktop publishing and PC paint programs.



unretouched photos

#### **SPECIFICATIONS**

- \* Resolutions are switch selectable: High - 256 x 244 x 6; Medium - 128 x 122 x 6; Low - 64 x 61 x 6
- \* All images are represented in 64 levels of gray scale.
- \* Video processing and display utilities provided for PC-DOS/MS-DOS machines.
- \* Video Input: 1 volt Peak to Peak, B&W or Color 75 ohm termination
- \* Serial Output: RS-232 -- 8-bit, one stop bit, no parity, 300 bps -- 57.6 kbps selectable data rate, X-on/X-off Handshaking -- Switch selectable data compression (on/off) -- Picture file -- 62K bytes uncompressed.

#### **ImageWise Receiver/Display**

The **ImageWise Receiver/Display** is a 64-level gray scale black-and-white video display board which can be used as an independent serial input computer peripheral or as a dedicated display for the **ImageWise Digitizer/Transmitter**. The Receiver/Display accepts serial data directly (hardware or via modem) from the Digitizer/Transmitter board or files downloaded from a PC or other computer. It converts this data back into a picture suitable for display on a composite video input black-and-white (monochrome) video monitor.

**ImageWise's** default resolution is 256 x 244 x 6 bit. The Digitizer/Transmitter can be commanded to transmit medium and low resolution images to speed serial transmission. The Receiver/Display incorporates these command functions as switch-selectable options. All pictures, regardless of resolution, are displayed as full screen NTSC interlaced images in 64 levels of gray scale.



unretouched photos

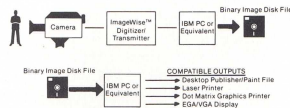
#### **SPECIFICATIONS**

- \* NOT bus dependent - can function stand-alone.
- \* Serial input: RS-232 -- 8-bit, one stop bit, no parity 300 bps -- 28.8 kbps data rate; X-on/X-off Handshaking.
- \* Video output: 75 Ohm, 1.5 V peak to peak NTSC composite video.
- \* Selectable Resolution: High - 256 x 244 x 6; Medium - 128 x 122 x 6; Low - 64 x 61 x 6
- \* Upload/Download utilities provided for PC-DOS/MS-DOS machines.
- \* Modem compatible: Easily functions as a video telephone to send images anywhere.
- \* IBM PC compatible, optional PC utility Disk converts ImageWise Files for use with popular Desktop and Paint programs.

#### **TELE-IMAGING AND SECURITY**



#### **COMPUTER IMAGING AND VIDEO PROCESSING**



**DT01**  
**DR01**

**Digitizer/Transmitter** **\$349.00**  
**Receiver/Display** **\$349.00**  
**ImageWise IBM PC Utilities disk** **\$29.00**  
**Combined ordering price** **\$649.00**

**DT01/DR01**  
**OEM Configuration in quantity lots are available, Call for pricing.**



The Micromint **Serial EPROM Programmer** was designed to be used as a standalone unit or to be connected to the serial port of a host computer or terminal. This EPROM programmer uses a microprocessor to provide a fast and efficient manner of programming, verifying and copying a large variety of EPROM types. When the **Serial EPROM Programmer** is used with a host computer or terminal it will generate



its own menu which will guide the user thru the entire operation. In standalone operation the **Serial EPROM Programmer** is controlled by two pushbutton switches and the output to the user is provided through a seven segment LED display. The **Serial EPROM Programmer** communicates with a termi-

nal or host computer through an onboard serial port. The data rate is preset in ROM as 1200 bps; this can be reprogrammed to any standard baud rate from 300 to 19200 bps.

Features of the **Serial EPROM Programmer** include:

- \* Internal Vpp power generation.
- \* Menu selectable EPROM types (no programming configuration jumpers)
- \* Default power-up modifiable baud rates.
- \* Automatic power down of EPROM for installation/removal.
- \* Standalone or computer system/terminal connected operation.
- \* Menu driven operation.
- \* Single byte or full buffer write modes.
- \* 32 Kbytes onboard memory buffer.
- \* Read, Copy, or Verify EPROM.
- \* Intel hex file upload/ download.
- \* Verify after write.
- \* Verify EPROM erasure.
- \* Screen-dump by page or byte.
- \* Programs EPROMs in standard or fast algorithm mode.
- \* Supports Vpp settings of 25V, 21V, and 12.5V.
- \* Programs all 27XXX 5 volt single supply EPROMs including 2716, 2732, 2732A, 2764, 2764A, 27C64, 27128, 27128A, 27C128, 27256, 27512, 27C256, 27C512 and any functional equivalents.

|                 |                                                                                   |                 |
|-----------------|-----------------------------------------------------------------------------------|-----------------|
| <b>SEP-27AC</b> | Serial EPROM Programmer<br>(with case and power supply)                           | <b>\$349.00</b> |
| <b>SEP-27A</b>  | Serial EPROM Programmer Board<br>(OEM configuration without case or power supply) | <b>\$289.00</b> |

**NOTE: ALL MICROMINT PRODUCTS CARRY A LIMITED ONE YEAR WARRANTY.**

**PHONE ORDERS - Minimum order - \$25.00**

**TEL: 1-800-635-3355** (*Outside Connecticut*)  
**TEL: 1-203-871-6866** (*Inside Connecticut*)  
**FAX: (203) 872-2204**  
**TELEX: 643331**

**MAIL ORDER -** Please include your name, complete address, and product description.  
 Letters should be addressed to:

**THE MICROMINT, INC.**  
 4 Park Street  
 Vernon, CT 06066

## SHIPPING AND HANDLING

**Catalog prices do not include shipping.** Domestic orders are shipped either by **UPS** or **Federal Express**. F.O.B. point is Vernon, CT. 06066. Other carrier shipping is available upon request. **UPS Ground** - Please include \$2.50 for the first pound and \$.75 for each additional pound. **UPS 2nd Day Air** - Please include \$3.50 for the first pound and \$1.25 for each additional pound. **Overnight** - Please contact our Sales Department for rates and availability.

## PAYMENT

We accept VISA, MasterCard, and American Express. Please remember to include expiration date and name of cardholder. Prepayment of orders under \$25.00 is necessary. Please contact our Accounting Dept. regarding Wire Transfers. **Credit Terms** - Net/30 terms are extended to schools, government agencies, and qualified companies with prior approval from our Credit Dept. Connecticut customers must include 7 1/2% sales tax with their remittance.

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